Submitted by Jordan Weinstein, TMM pct. 21

"You are entitled to your opinion.
But you are not entitled to your own facts."
~ Daniel Patrick Moynihan

Dear Town Meeting Members,

In a letter and FAQ circulated by the Arlington **Park and Recreation Commission** (PRC) about artificial turf, we found numerous misstatements of fact that we feel need addressing.

Since then, we have spent several weeks researching scientific, medical, epidemiological, and journalistic sources and have consulted with scientists working in the fields of toxicology and public policy in order to bring you what we believe are factual answers (in green) to all 23 questions raised by the PRC.

We hope you take the time to look this over and use it as a guide in helping you weigh the evidence and make an informed decision about the **Article 12 Substitute Motion** when it comes before you at Town Meeting on May 8.

~ Beth Melofchik, Robin Bergman, Wynelle Evans & Jordan Weinstein

ARTIFICIAL TURF:
FACT-CHECKING THE PARK & RECREATION COMMISSION

1. What are synthetic turf systems comprised of?

PARK AND REC ANSWER:

Synthetic turf systems are typically comprised of a drainage stone base, shock attenuation pad, turf carpet, and infill. The turf carpet typically consists of polyethylene fibers stitched into a polypropylene primary backing and polyurethane secondary backing, very similar to a shag carpet in your house. This carpet is traditionally infilled with sand and crumb rubber made of recycled car tires. A shock attenuation pad is often used between the stone drainage base and turf carpet to provide resiliency and safety for the athletes.

THE REAL STORY:

Recent studies found per- and polyfluoroalkyl substances (PFAS, aka “forever chemicals”) in the plastic grass blades, backing, and tire rubber infill on artificial turf fields and in adjacent bodies of water. PFAS are a class of more than 12,000 chemicals linked to numerous health problems including cancer, nervous system toxicity, immune dysfunction, thyroid disease, and cardiovascular disease.

- https://www.atsdr.cdc.gov/pfas/PFAS-health-effects.html
- https://sinaiexposomics.org/pfas-chemicals-and-your-health

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2. Are synthetic turf fields safe for our children?

PARK AND REC ANSWER:

Yes. More than 50 independent studies from groups such as the US Consumer Product Safety Commission, and statewide governmental agencies have validated the safety of synthetic turf.

THE REAL STORY:

No. Those studies are either outdated, lack proper testing protocols or are tainted by their industry source of funding. An association has been found between early-childhood exposure to perfluoroalkyl substances contained in artificial turf and ADHD symptoms in a prospective cohort study.

- https://www.sciencedirect.com/science/article/pii/S004896972301700X

The CDC has issued a health advisory for users of artificial turf fields, especially children, which includes “aggressive” hand and body washing for at least 20 seconds using soap and warm water; removing clothing worn on fields and turning it inside out as soon as possible to avoid tracking contaminants to other areas; washing these clothes separately, and keeping shoes worn on these fields outside the home; discouraging eating while on the field; keeping drink containers closed and in a bag or covered container.

- https://stacks.cdc.gov/view/cdc/25186
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Dr. Stuart Shalat, an environmental epidemiologist, says children who play on artificial turf are exposed to an invisible cloud of ultrafine toxic tire particulates.

- youtu.be/UEVeAmqHTSM

Dr. Sarah Evans of the Icahn School of Medicine at Mount Sinai points out that children are uniquely vulnerable to harmful exposures from artificial turf surfaces because of their unique physiology and behaviors, rapidly developing organ systems, and immature detoxification mechanisms. Children may be exposed to artificial turf chemicals through ingestion, inhalation, skin absorption, and open wounds or broken skin. Children and young athletes breathe faster than adults, putting them at greater risk for inhalation of chemicals that off-gas from turf fields. Small children put their hands and other objects in their mouths, increasing the risk of exposure via ingestion. In addition, youth have a higher surface area to body mass ratio, produce more body heat per unit mass, and sweat less than adults, all factors that increase susceptibility to heat injuries that have been observed on artificial turf fields. Vulnerability to turf chemicals persists through the teen years as the reproductive and nervous systems continue to develop beyond the first two decades of life. Lastly, children have more future years of life over which chronic diseases linked to the chemicals in turf develop.

- https://docs.google.com/document/d/e/2PACX-1vSVdFLhUGLGG1YK8SQyy_SXPm24K1R_AwLXaOQuFmCAQ4PryZHpd7GM9uaZ6cSm7J7Q36D7meJkx1zU/pub

On July 30, 2008, the US Consumer Product Safety Commission released a statement saying that artificial turf was safe for children to play on. However, the statement was about levels of lead in artificial turf, not about the more recent evidence of PFAS.

- https://www.cpsc.gov/Newsroom/News-Releases/2008/CPSC-Staff-Finds-Synthetic-Turf-Fields-OK-to-Install-OK-to-Play-On

Turf fields at the high school level are especially concerning, as the proper expertise and budget is commonly not in place to effectively manage the microbial coating that grows on the plastic grass. While an understanding of the overall safety of synthetic turf fields is needed, the prevalence of Methicillin-resistant Staphylococcus aureus (MRSA) infections among professional, college, and high school football players, combined with the widespread use of synthetic turf fields, warrants an investigation of MRSA prevalence in synthetic turfgrass.

- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7222665/

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3. Games and practices are constantly being canceled because of rain, sometimes several hours if not days after a rain event, how would a synthetic turf field help?

PARK AND REC ANSWER:

Synthetic turf fields can be played on immediately after a rain event. They can handle play literally 24/7 year-round with lights. Adding a synthetic turf field takes the pressure off our natural turf fields thereby improving their conditions of them.

THE REAL STORY:

Springfield, Marblehead, and Martha's Vineyard are all examples of how natural grass fields are equally as useable as artificial turf. In grass, when drainage is designed properly and soil is
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properly aerated and maintained, the soil is able to hold more rainwater to reduce puddling after rain. Springfield does not cancel field use for rain.

- https://www.youtube.com/watch?v=Cmjv1qteLho
  https://www.turi.org/Our_Work/Community/Athletic_Playing_Fields/Frequently_Asked_Questions#Q4

Even if artificial turf fields offered more days and hours of play than natural grass, it results in children receiving greater exposure to the toxins leaching and off-gassing from the plastics in the turf. Many schools and towns prohibit play when hot summer temperatures reach 85 degrees or higher. Arlington experienced 20 days of 90 degree weather in 2022, 24 days in 2021 and 14 days in 2020. Summer temperatures have been breaking records year over year with heat levels in New England rising faster than elsewhere around the world. (see FAQs 12 and 13 for more on heat issues)

- https://www.burlingtonpublicschools.org/district/district_policies/utilizing_artificial_turf_in_the_heat
- https://www.providencejournal.com/story/news/2022/02/18/climate-change-status-each-new-england-state-noaa/6813339001/

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4. I've heard that synthetic turf fields cause more injuries than natural grass fields. Is that true?

PARK AND REC ANSWER:

This misconception came from news reports from NFL coaches and players. The NFL recently released its latest data that shows that is not true. Synthetic turf fields create a consistent playing surface that is far superior to our natural turf fields in Town in terms of safety, performance, and durability. Synthetic turf field specifications typically require rigorous testing procedures to ensure this at installation and sometimes throughout the life of the warranty, unlike a natural turf field.

THE REAL STORY:

Yes. Injury rates on synthetic surfaces are far higher than on natural surfaces. The NFL Players Association recently published a study showing conclusively that lower extremity injury rates at pro football games have been consistently higher on artificial turf, year over year, than on grass. Another concern is increased rates of turf burns (skin abrasions) associated with playing on artificial turf. These abrasions are a risk factor for serious bacterial infections from pathogens that thrive on plastic turf.

- https://www.turi.org/Our_Work/Community/Athletic_Playing_Fields/Frequently_Asked_Questions#Q5
- https://journals.sagepub.com/doi/full/10.1177/0363546518808499
- https://nflpa.com/posts/nfl-approach-field-surface-uneven

Play on synthetic turf at National Football League games resulted in a 16% increase in lower extremity injuries per play than that on natural turf. This association between synthetic turf and injury remained when injuries were restricted to those that resulted in 8 or more days missed, as well as when categorizations were narrowed to focus on injuries of the knee, ankle and foot. The higher rate of injury on synthetic turf was notably stronger when injuries were restricted to non-contact injuries; all statistically significant. NFL players have launched campaigns to #BringBackGrass and #FlipTheTurf.

- https://journals.sagepub.com/doi/full/10.1177/0363546518808499
- https://www.instagram.com/reel/Crjc18JNlwW/?igshid=MDJmNzVkMjY=
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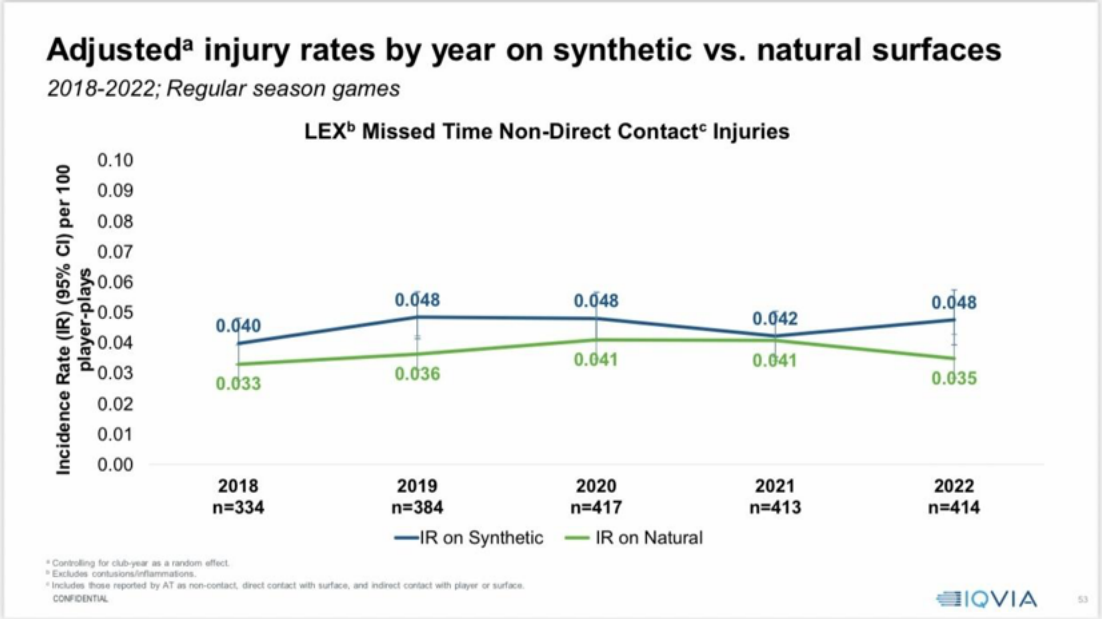
- https://www.instagram.com/reel/CrtyJFvg6tT/?igshid=MDJmNzVkMjY=
- https://www.instagram.com/reel/CrwYELyAot4/?igshid=YmMyMTA2M2Y=
- https://www.instagram.com/reel/CrrM-dsAoTd/?igshid=MDJmNzVkMjY=



An analysis of different outdoor playing surfaces suggests that falls on artificial turf may pose a greater risk of concussion than natural grass.

- https://www.newscientist.com/article/2341481-athletes-may-have-higher-risk-of-concussion-on-artificial-grass/#Echobox=1665328950

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5. Are there benefits to the environment in converting a natural grass field to synthetic turf?

PARK AND REC ANSWER:

Yes. One synthetic turf field is the equivalent of three natural grass fields in terms of use. This prevents other open spaces from being converted to fields. They are also great for stormwater management since the drainage stone base can be designed to act as a storage system, along with the added benefit of groundwater recharge. They also eliminate the use of fertilizers, pesticides, and irrigation and have reduced maintenance requirements.

THE REAL STORY:

No. A 2006 Canadian study found that a natural grass field absorbs nearly 17 tons of CO2 over ten years. Over the same time, an artificial turf field of the same size releases 55 tons of CO2 into the atmosphere. A 2017 Swedish study concluded that greenhouse gas emissions from an artificial turf field smaller than that used in the Canadian study would generate 527 tons of CO2 over a ten year period.

- https://climateactionmoreland.org/2021/02/28/natural-grass-or-synthetic-turf-what-are-the-total-life-cycle-emission-profiles/#:~:text=A%202006%20Canadian%20total%20life%20cycle%20emissions%20study,in%20Australia%20with%20most%20materials%20going%20to%20landfill%29.

According to oceanographers, ecologists and environmental policy experts, artificial turf fields have detrimental effects on the environment. Artificial turf field carpets, infill, and blades must
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be replaced every 8 – 10 years. This causes recurrent impacts to the environment in terms of fossil fuel consumption, construction impacts, and landfilling or dumping of the used turf. These risks are higher than those from natural turf, even when adjusted to take into consideration the fertilizers, pesticides and paint that natural grass turf requires.

- https://theithacan.org/sports/artificial-turf-raises-environmental-concerns/

Artificial grass causes significantly higher volumes of rainwater runoff than living grass. In fact, not only does artificial grass perform worse hydrologically than living grass, but the design specifications of artificial grass influence its hydrological response. Living grass is significantly better at water absorption.

- https://www.sciencedirect.com/science/article/abs/pii/S1618866721002570

Studies have found PFAS in wetlands adjacent to artificial turf fields, suggesting that these chemicals migrate and contaminate the environment. Runoff from artificial turf fields releases microplastics into the environment resulting in contamination of drinking water and wildlife throughout the globe and in human blood, lungs, and placenta.

- https://www.atsdr.cdc.gov/pfas/PFAS-health-effects.html
- Amato-Lourenço et al. Journal of Hazardous Materials. Vol. 416, 15
- August 2021, 126124. doi: 10.1016/j.jhazmat.2021.126124
- Ragusa et al. Environ Int. 2021 Jan;146:106274. doi:10.1016/j.envint.2020.106274.
- Leslie et al. Environment International. Vol. 163, May 2022, 107199. 10.1016/j.envint.2022.107199

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6. Do synthetic turf fields require maintenance?

PARK AND REC ANSWER:

Yes, but it is minimal in comparison to natural turf. There is no weekly mowing, irrigation, fertilization and lining of the fields required. It is estimated that the maintenance requirements on a synthetic turf field is about 1⁄2 that of a natural turf field. This would help with the limited maintenance budget we have in Town.

THE REAL STORY:

Yes. This includes fluffing, redistributing and shock testing crumb rubber in-fill; periodic chemical disinfection of the field surface; seam repairs and infill replacement; and considerable watering to lower temperatures on hot days. Typically, 10,000 gallons of water are used to cool a plastic field for 20 minutes. By comparison, maintenance of natural grass includes watering, mowing, fertilizing, sod replacement, etc. Communities shifting from natural grass to artificial turf usually need to purchase new equipment for this purpose.

- https://www.turi.org/content/download/13271/203906/file/Factsheet.Artificial_Turf.September2020.pdf.pdf

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7. How long does a synthetic turf field last?

PARK AND REC ANSWER:

Fields are warrantied for 8 years but with proper maintenance and testing they can last longer than that. The drainage stone base infrastructure is reused when replacement is required and in some cases, the shock pad and infill are as well.

THE REAL STORY:
Artificial turf fields wear out. Average life spans are in the 8 -10 year range. Replacing a field can cost upwards of $1,000,000. It's difficult to provide conclusive comparisons of artificial turf vs. grass, because of all the factors of installation, maintenance, replacement, and disposal, but this website shows just how many factors come into play. It also raises the issue of artificial turf field failure, and the difficulty of securing recompense.

- https://www.safehealthyplayingfields.org/costs-synthetic-turf

Crumb rubber "in-fill" percolating to the surface of the artificial turf field of Arlington Catholic High School

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8. Can synthetic turf fields be recycled?

PARK AND REC ANSWER:
Yes. The infill is often recycled and reused in the new field. There are manufacturing plants opening in the US for recycling the entire system. One manufacturer is already accepting fields and using the material to make shock pads. The carpet is also being recycled into plastic lumber products.

THE REAL STORY:
No, not currently in the US. They are simply stockpiled, as below, in open fields, leaching toxins and microplastics into the ground and watersheds. An aspiring turf recycler was cited for environmental violations while attempting to open a plant. The CEO of Re-Match Turf Recycling says, "there is no synthetic turf recycling plant in America yet." Re-Match runs the only recycling facility in the world in Denmark. Even the Synthetic Turf Council admits "Unfortunately, converting synthetic turf to a recyclable material that is usable cannot be done at the point of removal. Material must be shipped to different processing locations." However, those unspecified recycling locations have yet to be identified.

- https://www.phillyburbs.com/story/news/environment/2023/03/20/pa-officials-say-turf-recycler-is-violating-environmental-laws/69995371007/
- https://www.youtube.com/watch?v=Y5o3J7uy4Tk
- https://www.momscleanairforce.org/resources/advanced-recycling/
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According to PEER Science Policy Director Kyla Bennett, a scientist and attorney formerly with the U.S. Environmental Protection Agency, rather than being recycled, old turf fields and their rubber crumb infill are dumped in abandoned lots, alleys, and wetlands.

- https://peer.org/artificial-turfs-big-lie-old-fields-not-recycled/

Acres of discarded turf in Pennsylvania. Rolls of turf dumped in Franklin, MA near a wetland.

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9. Don't many of the surrounding communities have synthetic turf fields?

PARK AND REC ANSWER:

Yes. Many surrounding communities have and continue to install synthetic turf fields. Waltham, Lexington, Winchester, Medford, and Somerville to name a few. Many of these were permitted through their Conservation Commissions.

THE REAL STORY:

Boston, Concord, Littleton, Nantucket, Sharon, and Wayland have imposed one to five year moratoriums on artificial turf, and many other communities are considering them as well. The Massachusetts legislature is considering bills that would outright ban any further purchase and installation of artificial turf fields under state and municipal contracts (Senate Bills 2372 & S2057; House Bill 958) anywhere in the state due to its links to environmental pollution and human disease.

Martha's Vineyard, Marblehead and Springfield all have installed organically managed natural grass sports fields that are used without the need for seasonal "rest" periods.

The Town of Oak Bluffs on Martha's Vineyard denied the permit for an artificial turf field requested by Martha's Vineyard Regional High School

- https://www.oakbluffsma.gov/DocumentCenter/View/8471/MVRHS-Special-Permit-Decision----signed-May-16-2022
- https://concordma.gov/DocumentCenter/View/36474/Town-Meeting-Voting-Results---all-Articles
- https://www.turi.org/content/download/12156/190509/file/Natural+Grass+Playing+Field+Case+Study+Springfield+MA.+June+2019.pdf
- https://www.turi.org/content/download/12705/198916/file/Natural+Grass+Playing+Field+Case+Study+Marblehead+MA+revised.Nov2020.pdf
- https://www.turi.org/content/download/13432/205432/file/Natural+Grass+Playing+Field+Case+Study+MV+MA.Dec2020.pdf
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10. I've heard synthetic turf contains PFAS. Is that a problem?

PARK AND REC ANSWER:

Based on recent testing most PFAS compounds tested for were not detectable in synthetic turf from the manufacturer. No PFAS compounds were detected at concentrations above MassDEP standards. No other PFAS compounds were detected at concentrations that would cause a contact or leaching concern to groundwater or surface water. PFAS concentrations that typically occur in the soil as a background condition were higher than PFAS concentrations in synthetic turf from the manufacturer. Because of perceived concerns, manufacturers are now moving away from using PFAS. As a Town, we can require that the synthetic turf be tested and certified as non-detect as defined in EPA Method 537 and California Proposition 65.

THE REAL STORY:

Human effects of artificial turf

It definitely is. According to the EPA, there's really no level of exposure that's been identified as being safe. In developing standards for drinking water or edible fish or other pathways of exposure, EPA and other regulators often develop what's called a reference dose: an amount of PFAS chemical taken into our bodies each day that is not thought to cause a harmful health effect over the long run. These reference doses do take into account body weights, recognizing that children and people with smaller bodies might see health effects at lower levels of exposure. However, one thing we've learned is that these reference doses go down over time as we learn more about the harmful health effects. So what is currently considered a safe level, may not be safe in the future with new science.

PFAS represent a large public health challenge. Silent Spring Institute supports the idea of "the essential uses" framework, where PFAS should not be used in products that don't serve an important function for health or safety, or where we have substitutes that serve the same function but don't pose the same concerns about toxicity.

- https://loe.org/shows/segments.html?programID=22-P13-00037&segmentID=5

PFAS have long been used in a variety of commercial products, including nonstick frying pans, water-repellent sports gear, stain-resistant rugs, and cosmetics. Significant evidence suggests that PFAS, including PFOA and PFOS, can accumulate and persist in the body for long periods of time. Animal and human studies indicate that exposure to PFOA and PFOS may lead to cancer in addition to other serious health problems. In June 2022, EPA announced that PFOA and PFOS are more dangerous than previously thought even at low, presently undetectable levels

- https://www.natlawreview.com/article/epa-designates-pfas-chemicals-hazardous-substances-newly-proposed-cercla-regulations#:~:text=EPA%20announced%20plans%20to%20regulate%20certain%20perfluroalkyl%20and,will%20be%20designated%20by%20EPA%20as%20hazardous%20substances.

Environmental effects of artificial turf
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Background soil levels of PFAS come from human contamination because PFAS are man-made and not found naturally in nature. Sarah-Jeanne Royer is an oceanographer and scholar at the Scripps Institution of Oceanography, where she specializes in how the degradation of plastics affects the environment. In 2018, Royer co-authored a study on the life cycle of plastic in the environment. The study concluded that polyethylene — the most common type of plastic and the type used for the grass blades of artificial turf — emits greenhouse gasses, ethylene, propylene and methane into the atmosphere as it breaks down. Methane, which is 20 times more powerful at warming the atmosphere than carbon dioxide, is currently driving 25% of atmospheric warming. Additionally, the production of one ounce of polyethylene releases an ounce of carbon dioxide, according to the Environmental Protection Agency.
Royer and other scientists concluded that because of its composition and surface area, artificial turf has a distinctly large contribution to climate change in comparison to other plastics. Following the publication of the study, Royer and other scientists called for bans on artificial turf.

- Planned turf field at IC to contain toxic chemicals | The IthacanPlanned turf field at IC to contain toxic chemicals | The IthacanPlanned turf field at IC to contain toxic chemicals | The Ithacan

Each full-size field removes over two acres of ecosystem that sequesters carbon, and covers it with multiple layers of plastic.

- https://www.sierraclub.org/massachusetts/artificial-turf

Scientists say that wild animals are now being found with high levels of PFAS in their tissue. At a Michigan state park, signs are posted warning hunters to not eat the deer they hunt due to dangerous levels of PFAS in their meat.

- https://www.nytimes.com/2023/02/22/climate/pfas-forever-chemicals-wildlife-animals.html?unlocked_article_code=faE8gnBx3a8DX7aJjarbGNGthxWOX2f2fJ468yRTJG-9SPSZTShqtLeDRhgmvxOSJf5nho-R0cj7QB2kfWNiunMIMHygLk5VFRrfWbUqXR4iQAqxWKmkhXN3ppELFSOLdb0E2_jRY0EkfCjatc09thCcVCm-D0Y3NVMBjVll0NlpCbM4wWySCG-LsYZseHDgi9njep-rx-zQ7nrmket92t2G8i8Hpkex83QziErPWwwgO6e16zS3XPUfuZd-BOqKVr9t55PMi8V-ozdwJtRh9UQY5NAX8SPRUG0vxmGPgixZWHKA1PCQJ-hWzvWks08pXZEEb3UIx_OgM72ax-VeN2TsND2GGlK9DE3HyLL75CqZ&gifttype=fulllink&smid=url-share

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11. Don't many common household products contain types of PFAS?

PARK AND REC ANSWER:

Yes. PFAS are everywhere. Any extruded plastic fiber uses PFAS as a processing aid. They are often used in stain and water-resistant products like outdoor clothing, carpeting, sandwich wrappers, camping tents, non-stick cookware, and cosmetics. They are also used as firefighting foams and for medical purposes like sutures, stints, and meshes.

THE REAL STORY:

Yes, PFAS are everywhere. They are in our water, our food, cosmetics, clothing, packaging, etc. The federal government has taken steps to designate PFAS hazardous substances and to restrict their use in certain products. We are also exposed to other toxic chemicals in our daily lives – therefore, we are concerned with **cumulative risk**. Reducing our cumulative risk to
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harmful chemicals is the goal of a healthy community. This raises the issue of **bioaccumulation**: the more we are exposed to them, the greater levels that build up in our bodies. They can be detected in breast milk.

The Madrid Statement of 2014 documents the scientific consensus about the persistence and potential for harm of PFAS. It was signed by more than 250 scientists from 38 countries.

- https://www.cdc.gov/biomonitoring/PFAS_FactSheet.html
- https://www.iaff.org/wp-content/uploads/PFASadvisory.pdf
- https://greensciencepolicy.org/our-work/science-policy/madrid-statement/

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12. I've heard the temperatures of these fields can get hot. Are they safe to play on?

PARK AND REC ANSWER:

Synthetic turf fields are used all over the world and in places like Texas, California, and Arizona where sun and heat are much more problematic than they are here. Our sports seasons are in the spring and fall when the temperatures are cooler. Most sports organizations (MIAA, MYSA, etc.) have recommendations to modify play when there is a possibility of a dangerously high heat index.

THE REAL STORY:

Not in hot weather. Our neighboring community of Burlington has instituted health and safety standards for playing on artificial turf fields when temperature and humidity exceed recommended levels. When air temperature is 90 degrees, artificial turf is commonly upwards of 140-150 degrees. In Burlington, when the surface temperature of an artificial turf field is above 121 degrees, all activity must be moved to grass.

- https://www.burlingtonpublicschools.org/district/district_policies/utilizing_artificial_turf_in_the_heat

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13. Is a synthetic turf field a heat island?

PARK AND REC ANSWER:

No. Synthetic turf does not 'hold heat'. They return to the same temperature as natural turf with a loss of daytime heating. As compared to asphalt, brick, and masonry, synthetic turf cools much quicker with the loss of daytime heating.

THE REAL STORY:

Yes. The 2020 Arlington Hazard Mitigation Plan defines heat islands in terms of increased day-time temperature **or** evening temperatures, and goes on to map the hottest 5% areas (hot spots) in Town. Using 2016 LANDSAT satellite data, the Plan shows that the St Camillus Church area of town is a "hot spot." Adding additional daytime heat from artificial turf fields in an already heat-stressed area is not climate resilient and is detrimental to the environment, the players, and the surrounding community.

- https://www.arlingtonma.gov/home/showpublisheddocument/51627/637268071185670000
- https://www.epa.gov/heatislands/learn-about-heat-islands

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14. Is crumb rubber safe?

PARK AND REC ANSWER:

Yes. There are more than 110 technical studies conducted by academic, private, and government entities that have found little or no significant health risk.

THE REAL STORY:

Absolutely not. Most of these studies have been found lacking due to how old they are, improper testing protocols, or funding from industry sources. Of all the components of artificial turf, crumb rubber has received the most attention and has been studied the most. It is made from used tires and contains a whole host of toxic petro-chemicals, lead and PFAS.

- https://mountsinaiexposomics.org/artificial-turf/

Many athletes complain that the minute particles get into their eyes, hair, and ears. Exposure doesn't stop with the actual time spent on the playing fields or playgrounds - the small turf pieces routinely cling to clothes and shoes, and are therefore tracked into cars, homes, schools and child-care facilities. Over time, weathering, exposure to sunlight and heat, and general usage lead to the breakdown of tire crumbs. The crumbs then break into even smaller particles, releasing lead, cadmium, zinc and benzothiazole. These small pieces can become suspended in the air and then breathed in by athletes, children, and others who use the artificial field for playing, walking or relaxing.

- https://cehn.org/crumb-rubber-artificial-turf/

Environmental studies have shown that chemical runoff from artificial turf fields is toxic to aquatic organisms. A leachate and stormwater study by the CT D.E.P. showed toxicity from AT field runoff (infill was crumb rubber) to aquatic organisms (2010) and more recent studies published in 2022 show direct toxicity to freshwater fish from 6ppd-quinone, a chemical that leaches from used (oxidized) crumb rubber.

- https://portal.ct.gov/-/media/DEEP/artificialturf/DEPArtificialTurfReportpdf.pdf
- Acute Toxicity of the Tire Rubber-Derived Chemical 6ppd-quinone to Four Fishes of Commercial, Cultural, and Ecological Importance, M. Brinkmann, et al., Environmental Science & Technology, March 2022, v9, 4, pp 333-338

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15. Do the fields at Arlington High School and Arlington Catholic use crumb rubber?

PARK AND REC ANSWER:

Yes.

THE REAL STORY:

Yes. If you visit the Arlington Catholic field, you can see that the crumb rubber is on the move, percolating to the surface and then migrating away from the field and into surrounding grassy areas, conservation land, down the storm drains, and downhill directly to the Mill Brook 50 yards away. In the winter when the fields are plowed, the crumb rubber infill is plowed up into the snowbanks where it sits and further disperses into the soil.

Of all the components of artificial turf, crumb rubber has received the most attention and has been studied the most. It is made from used tires and contains a whole host of toxic petro-chemicals, lead and PFAS.

- https://cehn.org/crumb-rubber-artificial-turf/

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16. Are the new fields at Arlington High School going to use crumb rubber?

PARK AND REC ANSWER:

Yes. This was approved by the Conservation Commission in 2020.

THE REAL STORY:

A small artificial turf field to be constructed using crumb rubber was approved by the Conservation Commission in 2020 as part of the high school renovation project. This field was only partly in the wetland resource area of Mill Brook (because Mill Brook is culverted under much of the site) and the permit includes extensive chemical testing of the artificial turf components prior to installation. This approval does not set a precedent in Town for permitting artificial turf in wetland resource areas because only a small portion of the field was in the outer part of the resource area, and because now there is more recent scientific evidence of harm from artificial turf to aquatic life.

- https://www.arlingtonma.gov/town-governance/annual-reports/2020

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17. What other products use crumb rubber?

PARK AND REC ANSWER:

Crumb rubber is used for playground surfacing, running track surfacing, gym flooring, and rubberized asphalt paving.

THE REAL STORY:

All of the above, and all containing the same dangers of crumb rubber infill.

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18. How does crumb rubber impact the environment?
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PARK AND REC ANSWER:
More than 90 percent of scrap tires are being recycled instead of dumped in landfills. It is estimated that crumb rubber infill used in synthetic turf fields diverts about 30 million used tires from landfills and conserves billions of gallons of water by reducing the need to irrigate and avoids the use of fertilizers and pesticides.

THE REAL STORY:
Due to its small size, crumb rubber is considered a significant source of microplastics pollution. The migration of crumb rubber from the Arlington Catholic High School field was so bad that the Conservation Commission required action by the School to clean up and prevent further environmental risk due to migrating crumb rubber into the wetland resource area of Mill Brook.

Crumb rubber migrates from artificial turf fields and spreads through surrounding natural grass and soil. It washes into storm drains and into nearby wetlands and waterways. It also breaks down into micro-pellets that can be inhaled, rubbed into clothing, eyes, noses, and then introduced into an athlete's car or home.

In addition to the health risks to school children and athletes, approximately three tons of infill materials migrate off of each synthetic turf field into the greater environment each year. About 2-5 metric tons of infill must be replaced every year for each field, meaning that tons of the infill have migrated off the field into grass, water, and our homes. The fields also continuously shed microplastics as the plastic blades break down. In addition to PFAS, these materials may contain additives such as PAHs, flame retardants, UV inhibitors, etc., which can be toxic to marine and aquatic life; and microplastics are known to migrate into the oceans, food chain, and drinking water and can absorb and concentrate other toxins from the environment.

- http://www.center4research.org/nchr-statement-supporting-maryland-house-bill-to-ban-state-funds-for-artificial-turf-and-playgrounds/

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19. Are there natural alternative infills to crumb rubber?

PARK AND REC ANSWER:
Yes. Pine, cork, coconut husks and walnut shells are being used. They typically require a little more maintenance but are also cooler temperature-wise than crumb rubber.

THE REAL STORY:
There are so-called natural alternatives, but they have their own risks: Sand or coated-sand is composed of small sand particles, which can pose a cancer hazard if inhaled, and exposure to high airborne concentrations of these particles is linked to conditions such as silicosis, lung cancer, and chronic bronchitis, which can be an occupational concern for miners.

Plant-based infills are composed of materials such as cork, coconut fiber, walnut shells, rice husks, or wood particles. Plant-based infills may contain the least toxic chemicals, but are sometimes chemically treated. In addition, there can be concerns related to allergens, dust, and mold. Some materials may have added antimicrobials, which can be asthmagens.
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Manufacturers usually recommend the use of a shock pad with plant-based infills. These pads vary in composition but can introduce a number of chemicals of concern.

The concerns related to artificial grass apply to all types of synthetic turf, regardless of infill type. In addition, concerns related to disposal apply to all types of synthetic turf, because of the absence of turf recycling services in the US.

- https://healthybuilding.net/products/11-turf

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20. I heard there's a plan to redevelop Poets Corner into turf fields as part of a public partner partnership with the Archdioceses and Belmont Hill School. Can you provide more information about this?

PARK AND REC ANSWER:

Yes. This plan has been in the works for some time now. It includes a full-size baseball/soccer/lacrosse field on the church property (St. Camillus). This is the land that is currently the parking lot and wooded area. It also includes a little league baseball/soccer/lacrosse field on the Town property along with a half basketball court, a new playground, walking paths, and a parking lot. Much of the wooded area would be preserved as well. This project would create access and increased uses for all ages and would be fully funded by Belmont Hill School.

THE REAL STORY:

Very little has actually been agreed to among the parties involved. The Park and Recreation Commission has reportedly met with representatives from Belmont Hill School and the Boston Archdiocese which owns the parcel of land adjacent to Poets Corner. PRC has published a very rudimentary schematic of a renovation plan for Poets Corner, but has produced no agreement in principle, no provisional agreement, no tentative purchase and sale agreement for the purchase of the Archdiocese parcel, nothing.

The privatization of municipal outdoor space requires careful study. Poet's Corner is on top of an inactive, unlined municipal landfill. Investigations of hazardous materials would need to be made by a Licensed Site Professional and the landfill would have to be "closed" under MassDEP regulations. This may require a "cap" as was done for McClennen Park in 2006, which has a soil & grass cap over the closed municipal landfill.

Furthermore, if the proposed fields are in wetland resource areas as defined by the Town Bylaw and the Arlington Wetland Regulations of 3/16/2023, the Conservation Commission would have jurisdiction. Arlington Bylaw Article 8 Section 4 states that in order to receive a use permit, it must be "proven by a preponderance of the evidence that 1) there is no practicable alternative to the proposed work or project with less adverse effects and that 2) such activity, including proposed mitigation measures, will have no significant adverse impact on the resource areas or resource area values protected by the Bylaw."
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In addition, Section 32 of the Arlington Wetland Regulations currently requires compliance with Climate Change Resilience standards to protect resource areas. The Conservation Commission will review the permit application and take one of three actions: approve, approve with conditions, or deny the proposed work due to impacts to the resource areas protected by the regulations.

- https://www.arlingtonma.gov/town-governance/boards-and-committees/conservation-commission/regulations

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21. What would happen to the church property if this partnership doesn't happen?

PARK AND REC ANSWER:

The Archdiocese is planning to sell the church property to the highest bidder. It would be a reasonable expectation that a developer would propose a housing development for that site. The opportunity for the Town to have an expanded park and field space would be lost.

THE REAL STORY:

No one knows what the Diocese will do under different scenarios. And no matter what happens to the land, the health and safety of the children who may play on it and of the environment surrounding it should be of the highest priority.

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22. I heard that Poets Corner is a former landfill. Is that correct?

PARK AND REC ANSWER:

Yes. That's why this partnership is a tremendous opportunity to clean it up and create additional park and field space for community use, not a housing development that would put more of a burden on our school system.

THE REAL STORY:

Yes. Poet's Corner is on top of an unlined municipal landfill called "Keats Road Dump," inactive since 1969. Investigations of hazardous materials would need to be made by a Licensed Site Professional and the landfill would have to be "closed" under MassDEP regulations. This may require a "cap" as was done for McClennen Park in 2006, which has a soil & grass cap over the closed municipal landfill.

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23. Do the youth sports organizations in Arlington support the use of synthetic turf and the redevelopment of Poets?

PARK AND REC ANSWER:

Yes, and yes! Arlington Soccer Club, Arlington Youth Lacrosse and Arlington Youth Baseball and Softball Association all support the use of synthetic turf and the redevelopment of Poets.

THE REAL STORY:
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Unfortunately, yes.
We would support the redevelopment of Poets Corner if it used natural grass fields properly constructed with drainage, like Hurd Field, and organically managed as described in UMass Lowell TURI documents.

- https://www.turi.org/Our_Work/Community/Athletic_Playing_Fields

Data Based, Science Driven